

Name: Homework

Date: \_\_\_\_\_

1. Build the rule (in slope-intercept form), then find the x and y intercepts.

$$\begin{matrix} x_1 & y_1 \\ (-18, & 70.5) \end{matrix}$$

$$\begin{matrix} x_2 & y_2 \\ (4, & 4.5) \end{matrix}$$

$$a = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4.5 - 70.5}{4 - (-18)} = \frac{-66}{22} = -3$$

$$y = ax + b$$

$$70.5 = -3(-18) + b$$

$$70.5 = 54 + b$$
$$-54 \quad -54$$

$$16.5 = b$$

Equation:  $y = -3x + 16.5$

x-intercept: (5.5, 0)

y-intercept: (0, 16.5)

$$y = ax + b$$
$$0 = -3x + 16.5$$
$$-16.5 \quad -16.5$$
$$\frac{-16.5}{-3} = \frac{-3x}{-3}$$
$$5.5 = x$$

2. Build the rule (in slope-intercept form), then find the x and y - intercepts.

$$\begin{matrix} x_1 & y_1 \\ (36, & -49.5) \end{matrix}$$

$$\begin{matrix} x_2 & y_2 \\ (-120, & -69) \end{matrix}$$

$$a = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-69 - (-49.5)}{-120 - 36} = \frac{-19.5}{-156} = 0.125$$

$$y = ax + b$$

$$-49.5 = 0.125(36) + b$$

$$-49.5 = 4.5 + b$$

$$-4.5 \quad -4.5$$

$$-54 = b$$

Equation:  $y = 0.125x - 54$

x-intercept: (432, 0)

y-intercept: (0, -54)

$$y = ax + b$$
$$0 = 0.125x - 54$$
$$+54 \quad +54$$
$$\frac{54}{0.125} = \frac{0.125x}{0.125}$$
$$432 = x$$

3. Build the rule for the line travelling through an x-intercept of 12 and a y-intercept of 96.

$\rightarrow$  x-intercept:  $(\overset{x_1}{12}, \overset{y_1}{0})$       $a = \frac{y_2 - y_1}{x_2 - x_1} = \frac{96 - 0}{0 - 12} = \frac{96}{-12} = -8$   
 y-intercept:  $(\overset{x_2}{0}, \overset{y_2}{96})$

Equation:  $y = -8x + 96$

$$y = ax + b$$

$$0 = -8(12) + b$$

$$0 = -96 + b$$

$$+96 \quad +96$$

$$96 = b$$

4. There is a line travelling through an x-intercept of -1250 and a y-intercept of 50. What is the y-coordinate of a point on that line if its x-coordinate is 840

$\rightarrow$  x-intercept:  $(\overset{x_1}{-1250}, \overset{y_1}{0})$       $\frac{y_2 - y_1}{x_2 - x_1} = \frac{50 - 0}{0 - (-1250)} = \frac{50}{1250} = 0.04$   
 y-intercept:  $(\overset{x_2}{0}, \overset{y_2}{50})$

Equation:  $y = 0.04x + 50$

$$y = ax + b$$

$$0 = 0.04(-1250) + b$$

$$0 = -50 + b$$

$$+50 \quad +50$$

$$50 = b$$

$$y = ax + b$$

$$y = 0.04(840) + 50$$

$$y = 33.6 + 50$$

$$y = 83.6$$

Answer: A (840, 83.6)

## Complex Total

Ex. Dennis goes to the store to buy eggs and bagels.  
He bought 12 eggs and 15 bagels.  
The total cost of his order was \$ 30.00

Show the relationship between the cost of an egg and the cost of a bagel described in the problem above.

$x = \text{eggs}$   
 $y = \text{bagels}$

$$12(\text{cost of egg}) + 15(\text{cost of bagel}) = 30$$

$$12x + 15y = 30$$

$$\begin{array}{r} -12x \\ 15y = -12x + 30 \\ \hline 15 \end{array}$$

$$y = -0.8x + 2$$

$x$	$y$
0.50	1.6
0.75	1.4
1.00	1.2
1.25	1

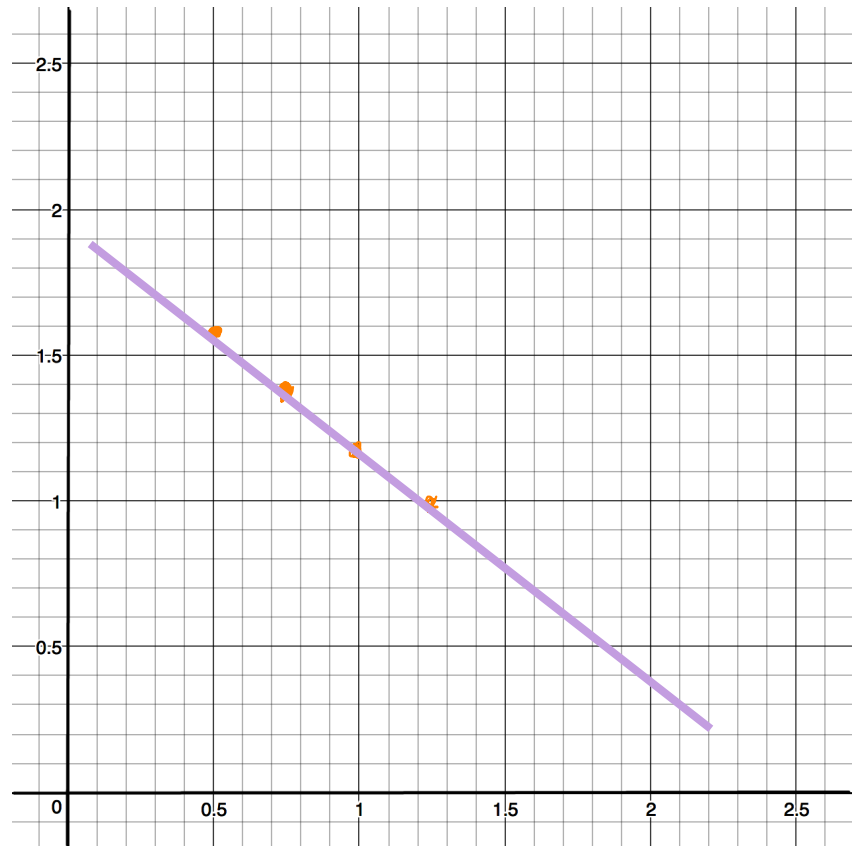
$$y = ax + b$$

$$y = -0.8x + 2$$

$$y = -0.8(0.5) + 2$$

$$y = -0.4 + 2$$

$$y = 1.6$$



**Question:** If an egg costs \$ 1.25, how much must a bagel cost?

$$y = ax + b$$

$$y = -0.8(1.25) + 2$$

$$y = -1 + 2$$

$$y = 1$$

**Answer:** A bagel must cost \$ 1.00